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WASH Field Report No. 380

**CHOLERA PREVENTION AND CONTROL:
GUIDELINES FOR ASSESSING THE OPTIONS IN
WATER SUPPLY, SANITATION
AND HYGIENE EDUCATION**

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INTRODUCTION

1.1 Background

Since the outbreak of the cholera epidemic in Peru in January of 1991 and its subsequent spread to numerous other countries in the Americas, WASH and other centrally funded AID projects have responded to requests by USAID Missions in those countries to help find ways to mitigate the potential or actual crisis. With the epidemic's progress, USAID has recognized the need for a concerted, centralized cholera control initiative rather than ad hoc interventions. At WASH, this initiative provided a challenge to define an approach to water/sanitation in the context of cholera. WASH's approach to water and sanitation is that this sector only functions well—i.e. has a beneficial impact on a community's health—if its dependency on factors such as community participation, personal and community hygiene behaviors, institutional strength, adequate funding and political support is taken into consideration.

In addition to the multidisciplinary approach, WASH feels strongly that the answer to the cholera epidemic lies not in mobilizing massive emergency resources, but rather in acknowledging that the causes of the epidemic are ones of poverty, underdevelopment, misuse of resources. These causes require longer term development strategies in the water and sanitation sectors before we can hope for an end to these outbreaks of preventable disease. This was powerfully expressed in the keynote paper to the Water Supply and Sanitation Collaborative Council Global Forum, which stated that the recent cholera epidemic in Lima cost the country \$460 million in exports and tourism. "For the equivalent amount, each of the million or so households in Lima could have been provided a high-level of in-house water-supply and sanitation system." (U.N. Centre for Human Settlements, Nairobi, 1991).

During a recent day-long cholera workshop, WASH staff applied its programming principles to producing a framework for cholera control along with recommendations on how to translate this framework into actions.

One such recommendation was for WASH to develop guidelines for conducting assessments of the water supply and sanitation situation as a basis for recommending short and long term actions to mitigate a cholera outbreak. Thus, the development of the Guidelines was seen as a way to reflect the multidisciplinary nature of water supply and sanitation, and to assure that countries requesting such assessments would receive a product of standard quality.

1.2 Purpose and assumptions

The **purpose** of these Guidelines for conducting a cholera assessment is to facilitate the collection and analysis of data for rapid cholera assessments by multidisciplinary teams. It is

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also to enable these teams to formulate recommendations which are feasible and acceptable to the host government, and which address cholera not as an emergency or crisis needing only crisis interventions, but rather as part of a larger development problem which needs to be addressed by sound development strategies.

The **assumptions** underlying the Guidelines are as follows:

- the country requesting an assessment is either experiencing a serious outbreak of cholera or is highly vulnerable to an imminent outbreak;
- the time allotted for the WASH assessment is relatively brief: 2-3 weeks;
- the assessment team is composed of 2-3 members, one from the engineering sciences, one from the health sciences, and a third either an institutional specialist or similar discipline. Not all disciplines appearing in the Guidelines will be represented by the team members;
- one team member is the designated team leader, whose responsibility, in addition to carrying out the technical role s/he plays, is managing the different stages of the assessment and facilitating meetings;
- the team will participate in a planning meeting in Washington prior to leaving for the country. The members will be able to familiarize themselves with the Guidelines and WASH's expectations of the assessment at that time.

1.3 Overview of the Guidelines

The Assessment Guidelines contain three main sections: data collection methods, assessment topics and questions, and data analysis. The assessment topics and questions section is divided into three parts: core descriptive data, direct cholera transmission factors, and indirect influencing factors. Each one of these parts is composed of topics, each of which contains an introduction and a set of assessment questions.

The direct factors for cholera transmission, i.e. water quality, water quantity, excreta collection and disposal, solid waste disposal, and personal/family/community hygiene practices, are those factors which provide scientifically-proven direct routes for transmission of the cholera organism.

The indirect influencing factors, i.e. hygiene education, community participation, institutional capabilities, interagency coordination/collaboration, economics/finance, and legal/regulatory, are issues which are known to be critical determinants of the effectiveness of any water supply/sanitation intervention. However, some or all of these are frequently neglected in favor of "technical" solutions.

The Data Collection Methods section provides general guidance on the best ways to gather needed information. The introductions to each topic to be assessed also contain specific suggestions on collection methods for that topic.

The Data Analysis section provides a step-by-step structured process, including sample worksheets, for the assessment team and its government counterparts to examine the findings and to formulate recommendations for short- and longer-term actions to undertake. It assumes that the team leader will facilitate this process by assigning tasks, calling meetings and managing the group exercises.

1.4 Using the Guidelines to Shape the Assignment

The important thing to keep in mind is that the *Guidelines* are just that: guidelines. They are meant to help consultants as they identify information needs, collect and analyze data to rapidly assess a potentially complex situation. WASH recognizes that there are a number of ways to go about such an assessment, and that the Guidelines contain many more questions than can be addressed by a small team, however expert, in a few weeks.

However, WASH is concerned that as many cross-cutting issues be looked at as possible. Some of these issues will probably fall outside of the area of expertise of the team members. This might be the case, for example, of issues pertaining to economics, financing and regulations. For the purposes of the assessment, such issues are framed by basic questions so that they may be investigated by non-specialists in those disciplines.

WASH expects teams to use the assessment questions to select a line of investigation, to create surveys or questionnaires, or checklists for observing situations. The questions for the most part, are structured in such a way that a “no” answer should signal a potential problem to the assessor. It should be pointed out that a number of questions are repeated under different headings, sometimes with a slightly different spin, to emphasize the importance of the issue and to elicit the perspective of different disciplines. And finally, on the question of the volume of information needs presented in these Guidelines, an integral part of an assessment is identifying gaps in available information, and addressing approaches to filling these gaps in the recommendations. WASH hopes that teams will be able to identify information gaps by using the questions in the Guidelines.

Cholera assessments can be limited or broad in scope, requiring adaptation of the Guidelines. The most likely time to shape and fine tune a cholera assessment assignment is during a team’s pre-departure planning meeting (TPM). The meeting facilitator should include time for team members to use the Guidelines to do the following:

- assign the assessment topics—especially the Influencing Factors—to team members according to interest and background;
- prioritize the questions within assigned topics according to parameters set by the SOW, time available, other country-specific considerations;
- determine which questions should be asked at the national, local or municipal, and non-municipal levels (or all or some of these);
- decide what methods to use to collect which sets of data;

- develop and agree on a workplan for the team as a whole and for each member based on the SOW and results of the above steps;
- develop survey instruments, questionnaires etc. for the various information gathering exercises using Guidelines questions;

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DATA COLLECTION METHODS

2.1 Before departing the U.S.

Much background reading and initial data collection can—and should—be done in the U.S. before entering the country to be assessed. Technical articles, health and water sector profiles, economic reports, program documents, prior consultant reports and similar documents are likely to be available from the World Bank, WASH Resource Center, Centers for Disease Control and PAHO in Washington. Computer searches might also yield articles and other resources with useful information for a cholera assessment.

Given the generally brief time accorded consultants to assimilate volumes of information, the WASH task manager can help by identifying, collecting and distributing documents as early as possible in the assignment.

2.2 In the country of assignment

Documents: The AID contact person for the assessment team should have relevant documents collected and available to the team when it arrives. These would include studies and reports from the relevant government ministries (Public Health, Water Supply/Sanitation etc.), reports from urban and rural water/sanitation agencies, any documents related to a national cholera plan, epidemiological and statistical reports, financial reports and other documents from banks and other lending institutions, technical or academic articles from the local university or research organizations, etc.

Interviews: Each team member should have interviews with representatives of as many ministries, organizations and agencies operating in his or her assigned subjects as time allows. Ideally, interview appointments should be set up before the team arrives.

Interview questions should be written out beforehand by the consultant, and be based on the assessment questions in these Guidelines. The same questions should be put to both management and technical personnel, or to service providers and clients, where applicable. This allows the consultant to discover perspectives and biases on a given issue.

Information obtained should be verified, either by repeating the question to others or observation, especially where information about peri-urban or rural populations coming from government officials is concerned.

Interviews can be carried out in communities, with community leaders, extension agents, heads of households. The same guidelines for preparing questions and verifying information apply.

Site Visits/Observation: At least one site visit to a cholera afflicted community should be scheduled for the assessment team. Ideally, this site would allow all members of the team to investigate their different subjects: water, excreta and solid waste disposal issues, socio-cultural and behavioral issues, health and educational program effectiveness. More than one site may be necessary to cover all concerns.

In countries where cholera outbreaks have not yet occurred, site visits are also essential in order to assess existing conditions and risk behaviors. Choice of sites to be visited should correspond to presumed risk for cholera.

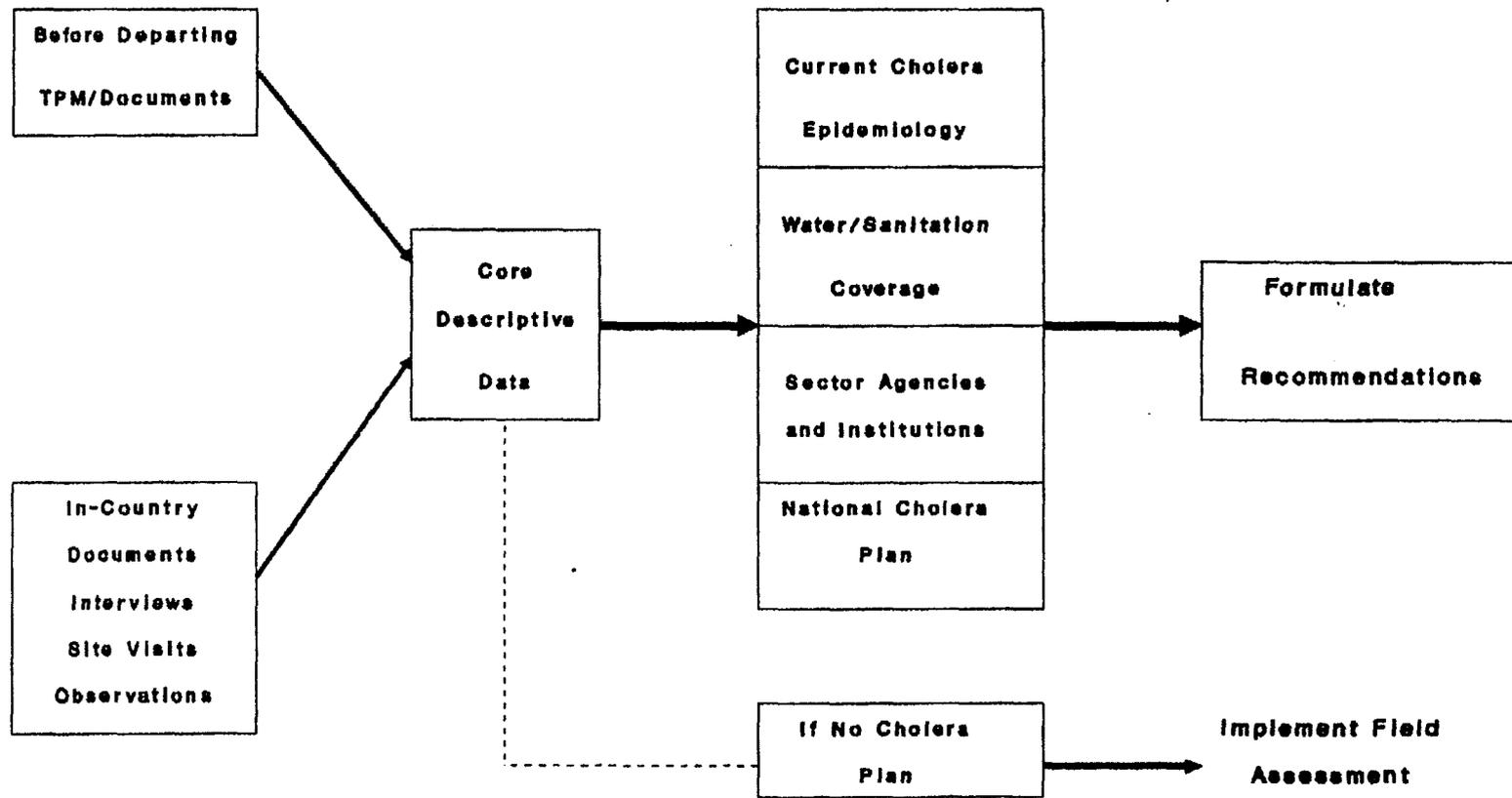
As much preparation as possible should be done beforehand to line up translators if necessary, to alert community leaders, to request the cooperation of heads of households, and to assure the participation of women from the community. However, advance organizers must be careful not to influence the assessment by giving too much information to the community on what will be investigated. General terms will suffice.

Team members should have both observation checklists and interview questions prepared in advance of the site visit. Information obtained should also always be verified with other informants to assure better reliability of data.

Figure 1 presents the assessment steps a team needs to consider prior to departure and in-country. If there is no cholera plan, a more in-depth field assessment is required which must look at both direct transmission factors and indirect influencing factors.

Figure 1

**CHOLERA PREVENTION AND CONTROL GUIDELINES
PART 1**



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3

CORE DESCRIPTIVE DATA

The first step in conducting an assessment is understanding the historical, physical, programmatic and institutional context of the situation being assessed. While this is routine for any WASH assignment, in the case of a cholera assessment it is necessary to focus on the epidemiology of the disease in addition to the other considerations.

Background documents and WASH reports might supply much of the contextual information. Epidemiological information can be obtained from the AID Mission, PAHO in-country office, Centers for Disease Control, MOH epidemiologists. National water/sanitation coverage data might be available from Public Works or similar agencies, National Drinking Water Decade program materials, water project offices. PAHO, again, might have the National Cholera Plan available for review.

In all likelihood, a rapid assessment will yield "ballpark" numbers, which will be adequate for its purpose.

3.1 Current Cholera Epidemiology

- Has cholera entered the country? When?
- What areas of the country are affected? What are the morbidity rates?
- Are the most affected areas urban? peri-urban? rural? What are the relative morbidity rates?
- Where does the cholera appear to be spreading to in the country?
- What is the case fatality rate in the most affected areas? Least affected areas?
- Which population groups appear to be the most vulnerable to getting cholera? To dying from cholera?
- What studies of cholera transmission are available (e.g. water/environmental sampling, case control studies of risk factors, other types of studies)? What are the main findings?

3.2 National Water/Sanitation Coverage

Domestic Use Water

- What proportion of households are served by municipal piped water?

- Of these, what proportion have water piped into the home and what proportion are served by public standpipes?
- What is the proportion of households with other water sources? Determine this by type, including:
 - protected wells, pumps
 - unprotected wells
 - surface water sources (rivers, ponds etc.)
 - tanker trucks
 - others (e.g. vendors)
- What is the proportion of households with their primary water source greater than 150 meters (or similar measure, as available) from the house?

Sanitation

- What percentage of the (urban/peri-urban/rural) population is served by latrines or other on-site excreta disposal (e.g. back yard)?
- What percentage of the urban/peri-urban/rural population is being served by water borne excreta disposal (septic tanks, sewers)?

National Coverage

- Is there a national plan to extend the coverage of potable water systems? Of sanitation? Is it being implemented? At what pace?
- Is the plan adequate for the coverage needs of the different population groups?
- What are the plan's main population targets, strategies and timeframes?
- Who are the major donors supporting the plan?

3.3 Agencies and Institutions in the Water Supply, Sanitation, Hygiene Education and Communications Sectors

- How is the governmental water supply/sanitation sector organized?—Who is responsible for water supply and sanitation at the national/municipal/rural levels?
- What non-governmental organizations are involved in water supply and sanitation? At what level do they operate?
- Which governmental and non-governmental agencies carry out health/hygiene education activities in communities or health centers?

- Which governmental/non-governmental agencies carry out mass communication programs?

3.4 National Cholera Plan

- Is there a plan? How does it fit in with other government initiatives (e.g. water/sanitation coverage plans)?
- How does the plan propose to address surveillance? case management? water supply safety? sanitation? public education?
- Which governmental/non-governmental agencies have an assigned role in the plan?
- Has the plan been adopted as national policy?
- Has a National Cholera Committee been created?
- What is its composition? Does it include representatives for environmental health, public health, epidemiology, sanitation, tourism, public education?
- Is the Committee's leadership respected and powerful?
- How often does it meet?
- What are its reporting requirements? To whom is it accountable?
- Does the Committee have access to high political authorities (e.g. presidential or ministerial levels?)
- How does the plan propose to finance its strategies?
- Are the proposed financial resources available?
- What concrete cholera-related measures have been undertaken as a direct result of the plan?
- Do mechanisms exist to update the national plan? Are they effective?

If there is no National Cholera Plan:

- Which government agencies and international organizations carry out activities related to cholera control?
- How are these activities coordinated?
- Who has decision-making authority over these activities? Where are directives issued?
- Is there a budget for cholera-related activities?

4

ASSESSMENT OF DIRECT CHOLERA TRANSMISSION FACTORS

There are five critical factors which contribute directly to the spread and severity of cholera:

- water quality,
- water quantity,
- excreta collection and disposal,
- solid waste disposal,
- personal and communal hygiene practices.

In an area experiencing a cholera crisis, there are likely to be extensive weaknesses in all five factors. In conducting an assessment of the status of these factors, it is crucial to examine all of them together since they are closely linked and exert influence upon each other. Lasting solutions to cholera vulnerability will include both engineering and social interventions. It won't do much good to provide a limited quantity of pure drinking water, forcing people to supplement with contaminated water, or to chlorinate water only to have people ingest food which is contaminated from unhygienic handling.

Assessing these five factors requires collaboration among various disciplines in order to obtain a complete overview of the problem area as a sound basis for making recommendations.

Figure 2 presents the direct transmission factors a team must include in the first phase of a field assessment.

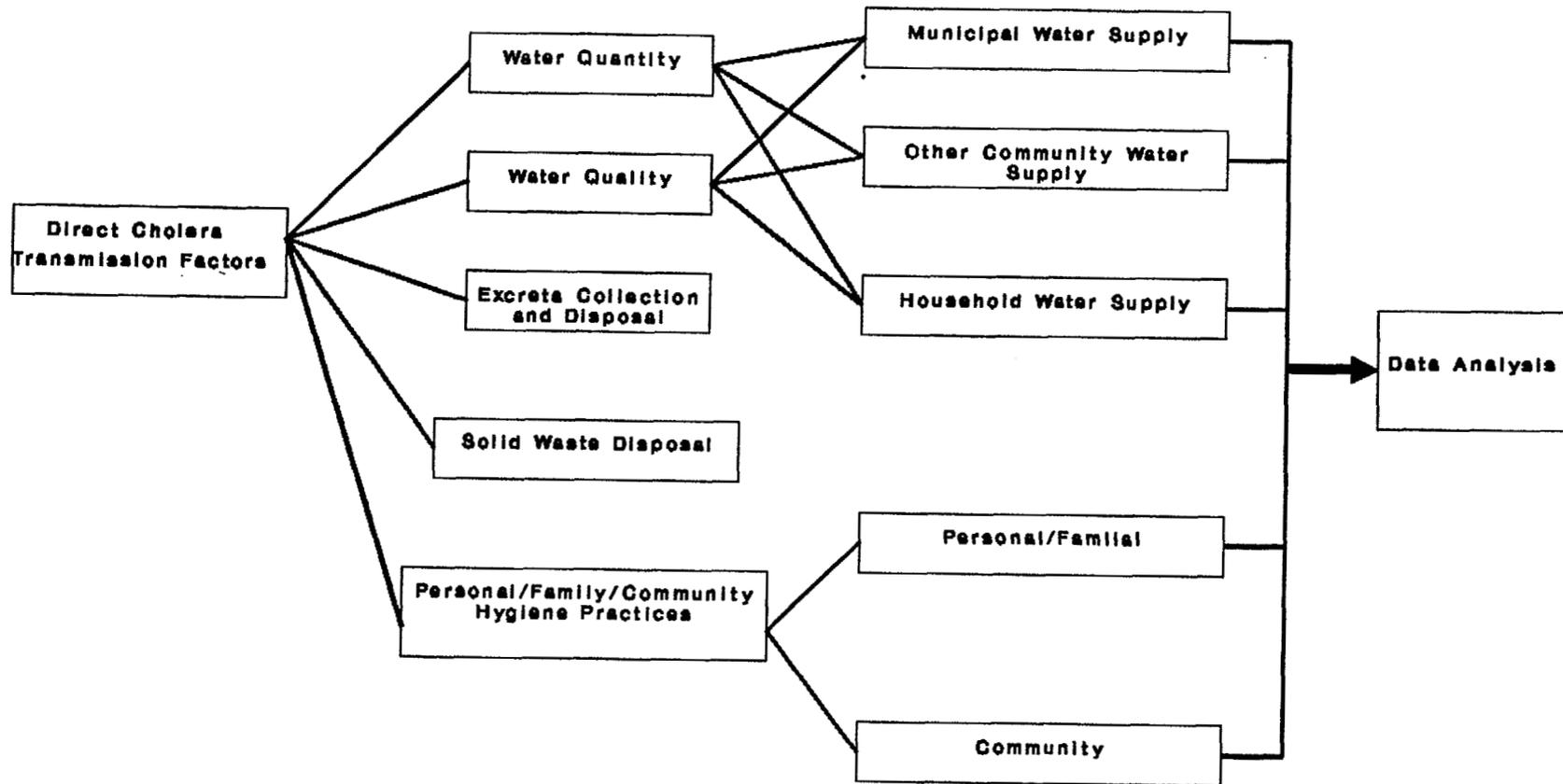
4.1 Water Quality

Contaminated water is the single most important route of cholera transmission. Contamination from fecal matter is due to poor sanitation (or excreta disposal), thus water quality and sanitation must be linked in both the assessment and in ultimate action proposals. Fortunately, the cholera organism is very sensitive to chlorine. Household and community chlorine disinfection of water is therefore a critically important preventive action. The assessment of water quality thus examines a number of considerations concerning chlorination. Long-term options for assuring a safe water supply must, however, include larger infrastructural, behavioral, institutional and regulatory measures which are represented in the assessment along with disinfection.

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Figure 2

CHOLERA PREVENTION AND CONTROL GUIDELINES
PART II: IN-COUNTRY FIELD ASSESSMENT—DIRECT FACTORS



The assessment of water quality can be carried out by site visits to laboratories and treatment facilities, interviews with water agency personnel, home visits, observation of distribution systems, and direct chemical tests.

Assessment Questions

Municipal Water Supply

- What proportion of municipal water supplies have facilities for chlorination?
- What type of chlorination system is in place?
- Is chlorination equipment in working order?
- Is the appropriate type of chlorine available?
- Are current stocks of chlorine adequate for chlorination needs?
- What are obstacles to increasing chlorine supplies, including:
 - foreign exchange
 - water authority budget
 - import duties
 - storage facilities
- Is there a system for monitoring chlorine levels? At the treatment plant? In the distribution system? At the tap?
- Who monitors and how often? Using what standards?
- If collected, are records on chlorine levels available?
- Is monitoring data used to adjust chlorine levels?
- What is the integrity of the distribution system?
- Is there an operations and maintenance program to manage problems of back-siphonage, crossconnection and leakage?

Other Community Water Supply

- What proportion of non-municipal water sources (wells, tanks, vendors etc.) are chlorinated?
- Have standard guidelines been developed for chlorination of community water sources?
- Are these guidelines being disseminated? To the right people?
- Who is responsible for chlorinating non-municipal water supplies?

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- Are materials available for chlorination of non-municipal water supply?
- Are these materials affordable to the persons or entities in charge of chlorination?
- What are obstacles to chlorination of non-municipal community water supplies?

Household Water Supply

- Are chlorination materials available for household water disinfection?
- Are these materials affordable to the most “at-risk” households?
- Have standard guidelines for household disinfection of water supply and storage facilities been developed?
- Are they being disseminated? Followed?
- What are obstacles to household disinfection of water supplies and storage facilities?

4.2 Water quantity

Water quantity cannot in reality be separated from water quality where a cholera control program is concerned. In areas where cholera is likely to be a serious threat, such as peri-urban slums, people might depend on public standpipes or tank trucks for water. The quality of these sources can be controlled. These sources, however, are likely to be inadequate for the needs of the population, and they will “scavenge” for additional water in highly polluted sources. An inadequate supply of water also means that people’s hygiene behaviors will be inadequate as well. Uses for water will be prioritized, and uses such as handwashing are probably not perceived to be as important as drinking and cooking.

An adequate, safe water supply is thus an important control factor for cholera. Until such a supply is established, people must learn to use water from chlorinated sources such as standpipes for drinking, and “scavenged” water for other needs such as bathing. They also must understand the importance of using even scarce water for hygienic purposes.

Water quantity can be assessed in much the same way and at the same time as water quality, including perhaps interviews with members of representative vulnerable households on conservation and rationing practices.

Assessment Questions

- What kind of water conservation or rationing, if any, is practiced in households? At the municipal level?
- What are the limiting factors to access to potable water?
- How can this access be increased in the short run?

- What is the percent non-accounted-for water loss in municipal systems?
- Is there a plan for identifying leaks and repairing them?
- Is there constant positive water pressure in municipal systems? If not, how often is pressure down or negative?—

What kind of alternatives to augmenting the current potable water supply are feasible and acceptable? (e.g. protect existing wells, spring captation, digging new wells)

- Is there a plan for developing any of these?
- Do financial and technical resources exist to carry out the plans?

4.3 Excreta collection and disposal

A key pathway to prevent cholera is to ensure sanitary collection and disposal of excreta, both in the home and in cholera treatment centers and other places where cholera patients may be. Excreta disposal is not entirely a technical or engineering problem, but enters the realm of people's beliefs about its dangers and practices stemming from those beliefs. It is necessary when assessing this transmission route, therefore, to explore not only what sanitary installations exist (or not), but also what the underlying reasons might be for their non-existence or disuse, and for general practices of vulnerable communities in disposing of adult and infant excreta.

Information for this category may be obtained by observation and interviews with sanitation and health personnel, as well as tactful discussions with community members.

Assessment Questions

- Where latrines are being used, are they being used correctly?
- Are they placed to avoid contamination of water supply?
- Where septic tanks are used, where are their contents emptied?
- Is disposal of septic tank contents adequate for preventing disease transmission?
- Where sewers are used, where does the wastewater go? Is it treated?
- In areas without latrines or flush toilets, where do people defecate?
- Do they bury their feces?
- How are infants' and small children's stools disposed of?
- How do hospitals and other cholera treatment centers dispose of items contaminated with fecal matter from cholera patients?
- Is it adequate to prevent further contamination?

- What opportunities exist for introducing new, more appropriate excreta disposal technologies?

4.4 Personal, family and community hygiene practices

After contaminated water, contaminated hands and food are the main sources for cholera transmission. People's hygiene practices may be more difficult to assess than water quality and excreta disposal, but an assessment of these practices, including whenever possible people's reasons for doing what they do, will provide a strong basis for future hygiene education activities.

A first step to assessing this area would be to determine what data related to hygiene practices already exists. Sources could include development organizations, MOH documents, university libraries (both in the U.S. and in-country).

While it won't be possible in the context of a rapid assessment to carry out a full study of these practices, important information can be obtained by interviewing select knowledgeable persons in technical positions and in the communities. Conducting a group discussion in a community might yield information about reasons for certain hygiene practices. If the appropriate relationship exists, the investigator might spend a few hours as a guest in a household observing and questioning as people go about their daily routines. Women should be considered the prime informants since tasks related to food, washing, and children tend to be their responsibility.

Collecting information about hygiene practices at the community level (food vendors, community kitchens) can be accomplished by observing a mealtime and questioning community informants.

Assessment Questions

Personal/Familial

- Is information concerning the following practices available?
 - Handwashing, bathing and other personal hygiene
 - Defecation and excreta disposal practices
 - Disposal of infant and children's stools
 - Household disinfection of water
 - Water storage and handling
 - Household solid waste (garbage) disposal
- If so, what are these practices and what are the reasons for people engaging in them?

- If this information is not available, is there a plan to collect it? Do the necessary technical and financial resources exist to do so?
- Is soap used for washing hands? If not, why? (Availability, affordability, perceived importance?)
- How do families without piped-in water store their water supplies inside and outside of the home? How do they collect it?
- What kind of small scale improvements (e.g. spigots on tanks or clay jars, attached dippers) might decrease the contamination of stored water supplies?
- What are food handling and storage practices in the home? Do people eat with their hands? Wash hands before eating and preparing food? Share a common vessel for eating?

Community

- If the community has community kitchens: Is soap available for washing hands? For washing dishes? Do the food preparers and servers wash their hands before preparing and serving? Is clean water used for washing dishes? Do clients wash hands before eating? With soap?
- If the community avails itself of food vendors for meals: Do any measures exist for controlling the hygienic quality of the food and the hygiene of the vendors themselves?
- Do schools have adequate toilet and handwashing facilities?
- Are latrines/toilets kept clean?
- Is soap and water available for handwashing?
- If schools have canteens: Do the food preparers and servers wash their hands before preparing and serving? Is clean water used for washing dishes? Do the children wash hands before eating? With soap?

4.5 Solid waste disposal

Assessment of vulnerable communities' solid waste disposal sites and practices must, for the purposes of cholera control, focus on actual or potential presence of fecal matter and whether this represents a contamination threat to individuals and water supply. It is also important to assess disposal sites and practices at the household, municipal or community levels, as well as at hospitals.

Site visits, observation and questioning are likely to elicit the necessary information.

Assessment Questions

- Where are solid waste disposal sites located vis-a-vis population centers?
- How do solid waste disposal sites represent a cholera transmission hazard to the population (fecal contamination by diapers, used toilet paper, location, used as defecation site, children scavenge in them)?
- Where do people throw away disposable diapers, if they use them?
- How is toilet paper and other cleaning materials disposed of?
- Do hospitals burn or safely dispose of solid waste that might be contaminated?

5

ASSESSMENT OF INDIRECT INFLUENCING FACTORS

In addition to the five direct factors in cholera transmission, there exists a number of additional factors which influence them. These indirect or influencing factors—Hygiene Education, Community Participation, Institutional Capabilities, Interagency Coordination/Collaboration, Economics and Finance, and Legal/Regulatory—cut across the direct transmission factors for cholera. Their strengths and weaknesses explain the status of the direct factors. For example, a cholera-afflicted area may have benefitted from a water/sanitation program in the past which provided adequate construction of wells and latrines, but with minimal accompanying hygiene education or community participation. The result is that the water source isn't being maintained and the water supply is contaminated, and the community lacks the means and leadership to address these problems.

The results of an assessment of strengths and weaknesses of these factors translate into strategies for a concerted combat against the disease, not just in the face of a crisis, but in achieving sustainable low vulnerability in the future.

Figure 3 lays out the indirect influencing factors an assessment team must take into account when conducting a field assessment.

5.1 Hygiene Education

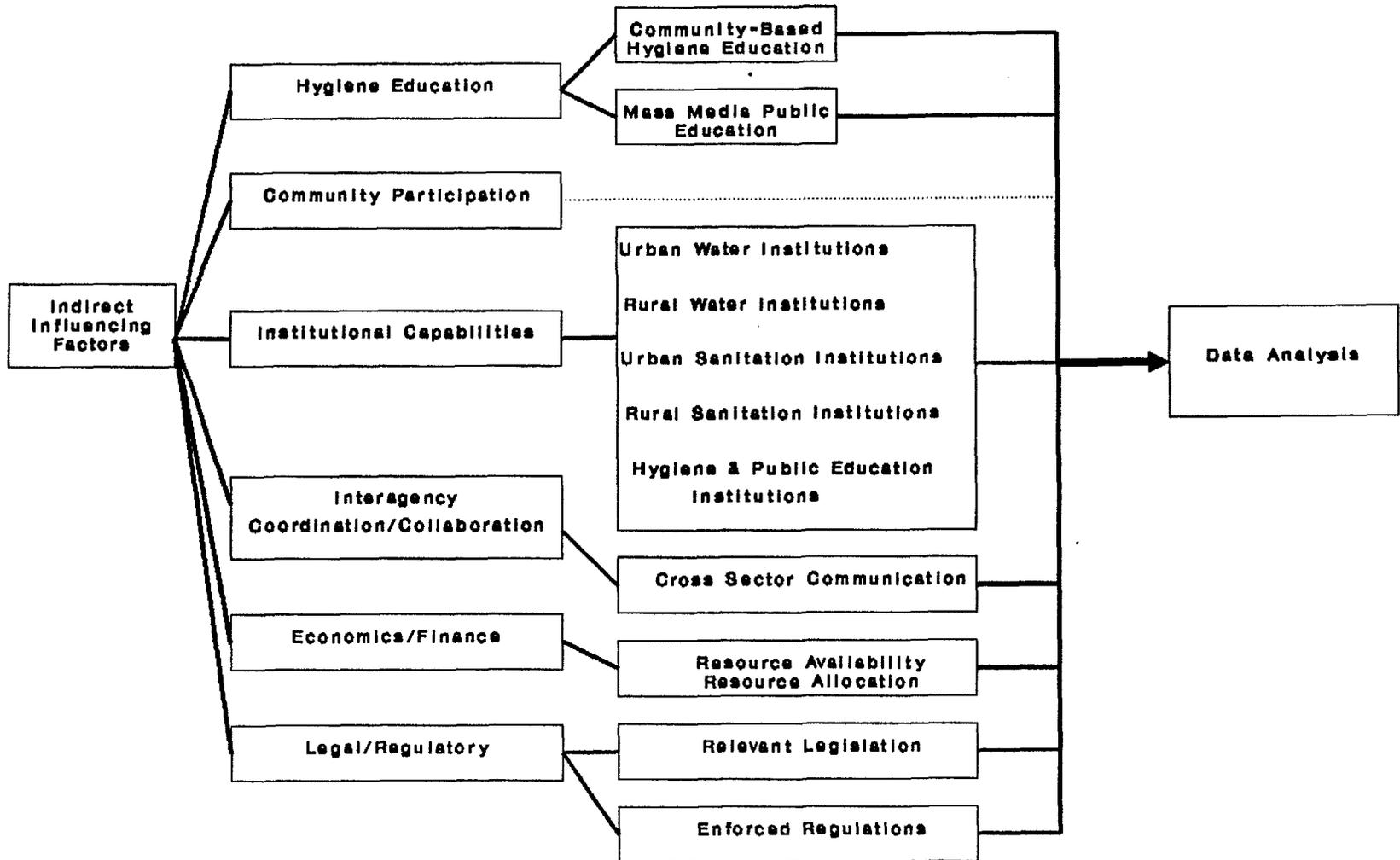
Hygiene education is considered the vehicle necessary for influencing people's behaviors likely to contaminate water and food and transmit cholera. The purpose for assessing hygiene education in a given cholera situation is to determine the existing level of effort (if any) to influence vulnerable people's knowledge and behaviors so they may better protect themselves, their families and communities against disease. These efforts can range from mass media campaigns to small group educational sessions in clinics or other community centers.

The assessment of hygiene education also aims to determine the effectiveness of any such efforts. Several elements considered essential for effective hygiene education are addressed via the assessment questions: Research on current knowledge and behaviors, cultural, religious and socio-economic appropriateness of educational strategies and materials, solid program management and evaluation.

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Figure 3

CHOLERA PREVENTION AND CONTROL GUIDELINES
PART III: IN-COUNTRY FIELD ASSESSMENT—INDIRECT FACTORS



Assessment Questions

General

- Have data about people's knowledge, attitudes and practices in relation to water use, hygiene and sanitation been collected?
- Have standard messages and educational programs concerning the following been developed:
 - Household disinfection of drinking water and storage facilities with chlorine
 - Chlorination of community water supplies such as tankers, wells, vendors
 - Safe disposal of infants' and children's stools
 - Proper latrine use
 - Safe solid waste disposal
 - Handwashing after defecation and before handling food
 - Food hygiene (street vendors, restaurants, home)
- If so, who is the target audience? Does it include populations most vulnerable to cholera? Food vendors, restaurateurs, community kitchen staff?
- Are the messages based on an understanding of current beliefs and practices within the target audience?
- Do the messages take into account particular socio-economic, ethnic, religious and other characteristics of the target audiences?
- Do they provide realistic, feasible alternative practices for the target audience?
- How are the messages disseminated?
- Is their effectiveness evaluated? How?
- If no messages have been developed, is there a plan to do so?
- Are technical and financial resources available for research? Testing? Dissemination? Evaluation?

Community-based Hygiene Education

a. Programs/Personnel

- Are health/hygiene education programs being carried out at the community level (e.g. urban slums, rural communities)?
- Do existing programs target the following:

- mothers of infants and young children?
- women in general?
- food vendors?
- restaurant/community kitchen staff?
- Who are the “front-line” hygiene educators?
- Are they the appropriate choice of person given the socio-economic, ethnic, and religious makeup of the communities? Are their audiences likely to respect and listen to them? Are they able to work effectively with women? Are they role models of the behaviors they are promoting?
- Does their pre- or in-service training include cholera prevention and household/community risk analysis?
- How is the effectiveness of community-based hygiene education in bringing about desired behavior changes evaluated?
- Do primary or secondary schools have hygiene education programs?
- If so, are these nationally mandated programs?
- Do school teachers receive any training in hygiene education?
- Has an effort been made to include pharmacists, traditional healers, private practitioners, traditional midwives as community hygiene educators?

b. Materials

- What kind of educational materials, if any, are at the disposal of hygiene educators?
- Do any of these materials cover cholera/diarrheal disease prevention?
- Are existing materials appropriate for the ethnic and socio-economic makeup and the education level of the intended audience?
- Are these materials being used to support and enhance the disease prevention messages effectively?
- Is any hygiene education material (manuals, lesson plans, visual aids) made available to school teachers?

Mass Media Public Education

- Is the country currently carrying out any mass media public education effort related to cholera, other diarrheal diseases, water quality, environmental and domestic sanitation, personal hygiene, food vendor hygiene?

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- Which media reach the most people among the population groups most vulnerable to cholera? Which media are being used?
- What agencies/organizations are currently producing and disseminating educational messages about cholera?
- Are the messages being disseminated culturally appropriate for cholera prevention among the target population?
- Are the messages technically correct? Non-contradictory?
- What data, if any, were used as a basis for the design of these campaigns?
- How will the effectiveness of public education campaigns be evaluated?
- Do any examples of prior public education campaigns on a health topic exist?
- What applicable lessons do these efforts contain for the design and implementation of a cholera-related public education campaign?

5.2 Community Participation

One of the most important determinants of successful WS/S programs is effective community participation. Community participation is the process by which communities benefitting from improved water and sanitation systems become competent and independent managers of these systems. They acquire the technical and organizational knowledge and skills to resolve problems related to operations and maintenance. The community participation process enables communities to take charge of development efforts, to move from passive to active. Such participation is critical to the success of long-term solutions to cholera vulnerability.

An assessment of community participation must look for concrete evidence that it has effectively taken place: functioning community organizations which are accountable to their constituents, inclusion of minorities and the vulnerable, political and financial support for CP from the government. This evidence cannot be obtained in government offices alone, but must come from interviews and observations within target communities. Attending a community meeting, if possible, will yield information about the extent of participation and power-sharing by noting who attends, who speaks, how decisions are made, what role the "outside" plays.

Assessment Questions

- Has community participation been an aspect of water supply and sanitation programs or similar community development efforts in rural or peri-urban areas?
- In actual practice, how has community participation manifested itself on a weak to strong continuum:
 - as "cooperation" (providing labor and materials)?

- as “collaboration” (taking part in activities and decisions under the direction of outside agents)?
- as “involvement” (taking over management of activities from outsiders or initiating activities on their own)?
- Where there are health or development committees, are women and ethnic and religious minorities adequately represented?
- To whom are committees accountable? To outsiders or to the whole community?
- Are community-wide meetings held to discuss and resolve community problems?
- Does the government support the principle of community participation? Does it have a Community Participation plan or a department? Personnel charged with promoting Community Participation? Resource allocations? Logistical support?
- Do communities benefit from government-sponsored training programs?

5.3 Institutional Capabilities

Any strategies aiming at a permanent solution to cholera-vulnerability will require strong, capable institutions to carry them out. Institutions in the WS/S sectors with high performance seem to share certain characteristics: sound cost recovery programs, ability to respond to client needs, adequate numbers of well-trained technicians, management and administrative systems which allow people to “get things done” adequate financial and technical resources to accomplish their purpose.

Information on institutional capabilities can be obtained by interviewing a selection of managers, technicians, clients and outside “experts” persons who have dealings with an institution without being an employee. Documents such as annual reports, financial status reports, World Bank or other agency reports or studies should be exploited for data concerning institutional soundness.

Assessment Questions

Urban Water Institutions

- What percentage of average minimum wage do urban consumers spend on water?
- Is this cost reasonable to the average urban consumer?
- What percentage of operating revenue do operating costs represent?
- Is it clear who has jurisdiction to provide wastewater collection and disposal, especially in peri-urban areas?
- Do the urban water institutions have the capacity to monitor water quality effectively?

- Do they have adequate numbers of technically qualified staff?
- Do these institutions have sound management and administration policies and systems?

Rural Water Institutions

- Are the roles and responsibilities of these institutions clearly defined?
- Do these institutions provide maintenance parts and training to rural communities?
- Do they provide adequate extension personnel to rural areas?
- Are the technologies used appropriate for the areas served?
- Do they experiment with different water supply technologies (spring capping, rainwater catchment)?
- Do they involve the communities in operations and maintenance and cost recovery?
- Do these institutions have adequate numbers of technically qualified staff?
- Do these institutions have sound management and administration policies and systems?

Urban Sanitation Institutions

- What percentage of average minimum wage do urban consumers spend on sanitation services?
- Is this cost reasonable to the average urban consumer?
- What percentage of operating revenue do operating costs represent?
- Are the roles and responsibilities of these institutions clearly defined?
- Are these institutions providing adequate services to their client population?
- Are they open to experimenting with innovative technologies?
- Are they able to enforce regulations?
- Do these institutions have adequate numbers of technically qualified staff?
- Do these institutions have sound management and administration policies and systems?

Rural Sanitation Institutions

- Are the roles and responsibilities of these institutions clearly defined?
- Are these institutions providing adequate services to their client population?

- Are they open to experimenting with innovative technologies?
- Are they able to enforce regulations?
- Do these institutions have adequate numbers of technically qualified staff?
- Do these institutions have sound management and administration policies and systems?

Hygiene and Public Education Institutions

- Are the roles and responsibilities of these institutions clearly defined?
- Do these institutions provide in-service personnel training?
- Do they have the technical and financial capability to conduct research?
- Do they have adequate facilities, supplies and financing for materials production and testing?
- Do these institutions have adequate numbers of technically qualified staff?
- Do these institutions have sound management and administration policies and systems?

5.4 Interagency Coordination/Collaboration

As the diversity of direct causes of cholera demonstrate, numerous structural, behavioral and other factors underlie the spread and gravity of the disease. These multiple causes require a multi-disciplinary approach to both assessment of a cholera situation and to the formulation and implementation of containment strategies. In the same way that the multiple causes are interrelated, so must the agencies responsible for the different parts of the solution work together and strengthen each other's input. Weak coordination and collaboration among these various players indicates a problem area needing to be addressed as part of the overall plan.

Data concerning interagency coordination and collaboration can be obtained by questioning representatives about whether, with whom and how often they meet and coordinate activities. If no formal mechanisms exist, non-formal collaboration should be explored by asking appropriate questions.

At its most effective, interagency coordination and collaboration is institutionalized and official. Agreed upon and enforced mechanisms exist for various players to meet and share information and perhaps resources, and to collaborate in activities. Evidence of this should exist in documents such as national cholera plans and in actual collaborative efforts.

Assessment Questions

- What mechanisms exist to ensure communication between epidemiologists identifying cholera transmission routes, and water, sanitation and hygiene education personnel?
- What mechanisms exist to ensure communication/collaboration between water, sanitation and hygiene education personnel, and mass media/public education program personnel?
- Are representatives from all the following areas included in cholera information dissemination and action: tourism, transportation, port authorities, fishing, food vending, restaurants/hotellerie, journalism, finances?
- Do coordination/collaboration mechanisms exist between governmental and non-governmental cholera-related programs (Diarrheal Disease Control, Oral Rehydration Therapy, Water Supply/Sanitation)?
- How does collaboration between different technicians (health, sanitation, water, development, education) take place at the community level?
- Are any coordination/collaboration mechanisms for cholera control and prevention institutionalized or regulated? Enforced?
- What have been historical obstacles to coordination and collaboration among different health or development agencies involved in a common effort?
- Which obstacles to collaboration and coordination, if any, are currently being experienced by agencies directing efforts toward cholera control and prevention?

5.5 Economics and Finance

The question of economics and financing has particular importance in a cholera situation where a country is faced with the need to rapidly mobilize large amounts of resources to mitigate or avert a national disaster. The issue becomes one of resource constraints and financing priorities: where will the money come from to finance a cholera program, and will these finances be diverted from other programs? What are the expected consequences of these choices on both program beneficiaries and the country's economic situation? In addition, how a country allocates its limited resources among the many sectors is a powerful indicator of where its government's political priorities lie.

The assessment must take a look at current and future resource availability and constraints within the overall context of the country's budget. It must examine the relative importance accorded the water/sanitation/public health sectors from the resource allocation perspective. Economic and financial considerations must then be carefully weighed when formulating recommendations for dealing with cholera.

Economic and financial information is likely to exist in World Bank/IMF or similar institutions' reports both in the U.S. and in the country. Reports and statistics from the country's Ministry of Finance will indicate how resources are allocated among sectors, as would financial reports from the sectors themselves.

Assessment Questions

- What proportion of the water supply and sanitation capital budget currently comes from the government?
- Does any part of the recurrent budget come from external sources?
- What resources exist for training hygiene education and community outreach personnel?
- Does the current national diarrheal disease control program have the financial, technical and managerial capacity to expand certain activities such as training and hygiene education?
- How are household disinfection supplies, soap and other products related to cleanliness produced and distributed in the private sector?
- Are there resources within the government for expanding national sanitation coverage beyond the scope of current plans? Are these significant or marginal?
- Are there resources available for improving water quality control?
- What non-governmental resources are available for improving water and sanitation coverage?

5.6 Legal/Regulatory

Political will is often heralded as *the* determinant of the existence and effectiveness of programs to benefit underserved and marginalized populations. One measure of political will is the existence of regulations and statutes concerning government services. A more critical measure is whether these regulations are enforceable and enforced. In the case of cholera, so much of its severity and spread is the result of sub-standard water-quality and quantity, and of inadequate solid waste and excreta disposal services, especially among vulnerable populations. Part of the solution is, therefore, assessing the adequacy of water, sanitation and hygiene regulations, and finding ways to improve their enforcement.

Information concerning the existence of regulations should be found in relevant legislation, e.g. the Water Act. Observations and interviews should reveal how well, if at all, these are being enforced.

Assessment Questions

- What regulations exist concerning:
 - Municipal water quality?
 - Wastewater treatment and disposal?
 - Food vendor, restaurant and community kitchen hygiene?
 - Solid waste disposal?
- What agencies have regulating authority for these different areas of concern?
- Are these regulations adequate for cholera control?
- Do these regulations require measures which are reasonable and do-able?
- Are the regulations enforceable? Are they being enforced? How?
- What are obstacles to enforcing regulations?

6

ANALYZING AND INTERPRETING THE INFORMATION

6.1 Analyzing the Data Individually, as a Team, and with Government Counterparts

Once the assessment team has collected all data possible, it must organize and analyze it, both individually and as a team, to arrive at recommendations for feasible and effective actions. An important step in developing recommendations is to include government counterparts in finalizing them. The steps for analysis and interpretation of the data are explained below. It is the team leader's job to facilitate this process for the team.

Figure 4 presents the analysis steps an assessment team should follow.

STEP 1: *Individual Team Members*

The purpose of this first exercise is for each team member to clarify and analyze his or her findings and information gaps relative to his/her assessment topics:

Each team member should carefully review all the data obtained on the topics that were assigned to him/her, in both the "Direct Transmission Factors" and "Indirect Influencing Factors" categories. The consultant should draw up a list of major findings concerning factors influencing the cholera situation and information gaps which need to be addressed before decisionmakers can take action.

For each of the topics investigated, the consultant should then draw up a list of "strengths" (those things—structures, programs, policies etc.—already in place or ongoing which are useful in the battle against cholera) and "weaknesses" (problems or deficiencies which are contributing to the spread and severity of cholera) based on the main findings.

The consultant should use the assessment questions in the Guidelines to help organize the data and review the issues considered critical for cholera control.

Use Worksheet No.1

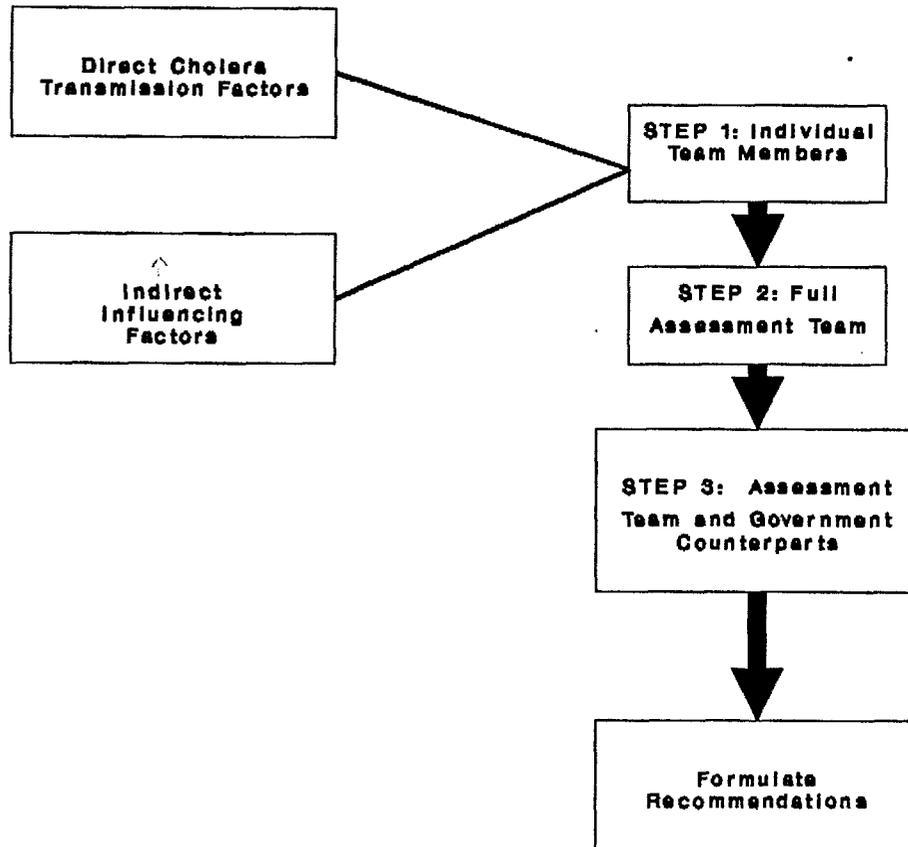
STEP 2: *The Assessment Team*

The purpose of this group exercise is to produce an initial set of recommended actions based on the analysis of the data collected.

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Figure 4

**CHOLERA PREVENTION AND CONTROL GUIDELINES
PART IV: DATA ANALYSIS**



In a team meeting facilitated by the team leader, each member presents his/her major findings, and what s/he feels are the strengths and weaknesses of his/her assessment subjects. The other team members should have an opportunity to clarify, question and add to each other's findings.

The team should then produce an initial list of recommended actions, both with short-term and longer-term impact, based on the results of the assessment. These proposed actions will be the basis for discussion and negotiation with government counterparts.

STEP 3: *The Assessment Team and Government Counterparts*

The purpose of this meeting is to analyze actions proposed by the assessment team according to feasibility and anticipated effectiveness, and to determine the final list of recommendations.

The assessment team presents its list of proposed actions to its government counterparts, along with an explanation of how these were produced, i.e. what are the findings and information gaps resulting from the data collection, and how do these findings constitute strengths and weaknesses inherent in the factors influencing the spread of cholera?

The government counterparts should have the opportunity to ask questions and clarifications of the team, and to propose other actions based on the assessment.

The team and the counterparts then analyze each proposed action to determine the relative feasibility of each:

what financial, technical and human resources are required to undertake the action under consideration, and what resources are actually available? The group should agree on a high, medium or low feasibility ranking for each action. High feasibility means the resource requirements are reasonable and available to carry out the action. Low feasibility means that the resources required are extravagant and not all available.

Other questions which the group might consider while analyzing proposed actions are:

- Is the proposed action likely to have a real impact on the spread and severity of cholera?
- Is the proposed action likely to be a true preventive barrier to a cholera epidemic?
- Is the proposed action targeting the right groups of people? i.e. the ones most susceptible to diarrheal disease or the ones most able to do something?

The advantages to finalizing the recommendations with government counterparts are that their participation will enhance the likelihood of the recommendations being in tune with government policy and priorities and of them being carried out.

An additional advantage is that the team can use this opportunity to promote a broader vision of a development situation where cholera is probably a symptom, not an end problem. By explaining the rationale for a cholera assessment to focus on factors beyond water quality and sanitation to include community participation, institutional considerations etc., the team will

be promoting strategies for permanently reducing vulnerability to outbreaks of preventable disease and for strengthening the social and economic fabric of the country.

[N.B. Flipcharts modelled on Worksheets No.2 and No.3 can be prepared in advance to facilitate this group exercise]

6.2 Formulating Recommendations

The actions which have the highest feasibility and expected impact become the priority recommendations to the government. Recommendations should be organized by categories or topics (as in the Guidelines, for example). They should be written as clearly and simply as possible, and in the active—not passive—voice. A recommendation should include the action to carry out, the person(s) or organization(s) responsible for carrying it out, specific quantities or numbers as appropriate, a timeframe for carrying out the action.

The recommendations should be presented in the following categories:

1. Actions which can be expected to have an immediate impact on the spread and severity of cholera

These actions are likely to fall under Direct Transmission Factors and are intended to prevent or halt an outbreak. They may call for extraordinary mobilization of personnel or resources, and probably cannot be sustainable over a long period. A certain amount of caution is required of the assessment team not to over-recommend actions in this category if resources are limited, with none left over for longer term activities.

Some examples of recommendations in this category are:

Water Quality:

Urban water agencies X, Y, and Z should undertake a search and emergency chlorine disinfection of all open wells and other water points used for drinking in the peri-urban areas of San Rafael, Miramar and Abuelita.

Community Hygiene Practices

The Ministry of Education with funding from UNICEF should sponsor a series of teacher seminars with the help of local health personnel for all primary and secondary school teachers on cholera control activities in school and giving effective health talks to pupils. UNICEF and WASH should immediately recruit and field program design consultants for this effort.

2. Actions which will have a longer-term impact on vulnerability to cholera

Topics in this category which are likely to require long-term actions are Institutional Capabilities, Community Participation, Legal/Regulatory, Economics and Finance. However, all topics may have short and long-term aspects, and neither should be neglected. For example, water quality must rapidly be improved to avert a cholera disaster, but it must also somehow be assured after emergency disinfection in order to avoid future or repetitive disasters. Thus a recommendation pertaining to expanding the supply and maintenance capabilities of the urban and rural water sectors over the next five years is as important as chlorination.

Another example of a longer-term recommendation:

Community-Based Hygiene Education:

WASH should provide assistance to the Ministry of Health to conduct a Knowledge, Attitudes and Practices Study relative to water use, sanitation and hygiene among the people who have migrated to the peri-urban areas of the five large cities of the country. WASH and the Ministry should then use this study to design a culturally appropriate 2-3 year hygiene education program for designated groups of people living in these areas.

WORKSHEET NO.1

Assessment Subject: _____

STRENGTHS

WEAKNESSES

WORKSHEET NO.2

PROPOSED ACTION
AVAILABLE

RESOURCES REQUIRED

R E S O U R C E S

WORKSHEET NO.3

PROPOSED ACTION

FEASIBILITY SCORE